What is claimed is:

1. A method of producing an anti-reflection film, comprising:

selecting a first material having a reflective index of n_1,

coating the first material on a transparent substrate having a reflective index of n_s to form a first layer having a thickness of d_1,

selecting a second material having a reflective index of n_2,

coating the second material on the first layer to form a second layer having a thickness of d_2 so that an optical admittance Y at a surface of the second layer opposite to the first layer is represented by,

$$Y = \frac{H}{E} = (x + iy)$$

where i is the imaginary number unit,

$$\begin{bmatrix} E \\ H \end{bmatrix} = \begin{bmatrix} \cos\delta_2 & (i/n_2)\sin\delta_2 \\ in_2\sin\delta_2 & \cos\delta_2 \end{bmatrix} \begin{bmatrix} \cos\delta_1 & (i/n_1)\sin\delta_1 \\ in_1\sin\delta_1 & \cos\delta_1 \end{bmatrix} \begin{bmatrix} 1 \\ n_s \end{bmatrix}$$

$$\delta_1 = 2\pi n_1 d_1 / \lambda_0$$

$$\delta_2 = 2\pi n_2 d_2 / \lambda_0$$

where λ_0 is a wavelength of incident light in vacuum,

selecting a third material having a reflective index of n_3, and

coating the third material on the second layer to form a third layer having a thickness of d_3,

wherein said reflective index of the transparent substrate, the reflective index and the thickness of the first layer, the reflective index and the thickness of the second layer, and the reflective index of the third layer are selected so that x and y satisfy the following formula,

$$0.9 \times \{(n_3^2 - n_0^2)/2n_0\}^2 < \{x - (n_3^2 + n_0^2)/2n_0\}^2 + y^2 < 1.1 \times \{(n_3^2 - n_0^2)/2n_0\}^2$$

where n_0 is a refractive index of an outer region at an outside of the anti-reflection film.

2. A method of producing an anti-reflection film according to claim 1, wherein said third layer is formed so that an optical admittance Y_e at a surface of the third layer opposite to the second layer is represented by,

$$Y_e = \frac{H_e}{E_e}$$

$$\begin{bmatrix} E_e \\ H_e \end{bmatrix} = \begin{bmatrix} \cos\delta_3 & (i/n_3)\sin\delta_3 \\ in_3 \sin\delta_3 & \cos\delta_3 \end{bmatrix} \begin{bmatrix} \cos\delta_2 & (i/n_2)\sin\delta_2 \\ in_2 \sin\delta_2 & \cos\delta_2 \end{bmatrix} \begin{bmatrix} \cos\delta_1 & (i/n_1)\sin\delta_1 \\ in_1 \sin\delta_1 & \cos\delta_1 \end{bmatrix} \begin{bmatrix} 1 \\ n_s \end{bmatrix}$$

$$\delta_3 = 2\pi n_3 d_3 / \lambda_0 ,$$

said thickness of the third layer being selected so that E_e is substantially equal to 1 and H_e is substantially equal to n_0.

3. A method of producing an anti-reflection film according to claim 1, further comprising forming at least one additional j-th layer having a reflective index of n_j and a thickness of d_j on the transparent substrate before forming the first layer where j is a natural number at least 4 so that an optical admittance Y' at the surface of the second layer opposite to the first layer is represented by,

$$Y' = \frac{H'}{E'} = (x' + iy')$$

$$\begin{bmatrix} E' \\ H' \end{bmatrix} = \begin{bmatrix} \cos\delta_2 & (i/n_2)\sin\delta_2 \\ in_2 \sin\delta_2 & \cos\delta_2 \end{bmatrix} \begin{bmatrix} \cos\delta_1 & (i/n_1)\sin\delta_1 \\ in_1 \sin\delta_1 & \cos\delta_1 \end{bmatrix}$$

$$\begin{bmatrix} \cos\delta_j & (i/n_j)\sin\delta_j \\ in_j \sin\delta_j & \cos\delta_j \end{bmatrix} \cdots \begin{bmatrix} 1 \\ n_s \end{bmatrix}$$

$$\delta_j = 2\pi n_j d_j / \lambda_0$$

wherein said reflective index of the transparent substrate, the reflective index and the thickness of the first layer, the reflective index and the thickness of the second layer, the reflective index of the third layer, and the reflective index and the thickness of the at least one additional j-th layer are selected so that x' and y' satisfy the following formula,

$$0.9 \times \{(n_3^2 - n_0^2)/2n_0\}^2 < \{x' - (n_3^2 + n_0^2)/2n_0\}^2 + y'^2 < 1.1 \times \{(n_3^2 - n_0^2)/2n_0\}^2$$

4. A method of producing an anti-reflection film according to claim 3, wherein said third layer is formed so that an optical admittance Y'_e at the surface of the third layer opposite to the second layer is represented by,

$$Y'_e = \frac{H'_e}{E'_e}$$

$$\begin{bmatrix} E'_e \\ H'_e \end{bmatrix} = \begin{bmatrix} \cos\delta_3 & (i/n_3)\sin\delta_3 \\ in_3 \sin\delta_3 & \cos\delta_3 \end{bmatrix} \begin{bmatrix} \cos\delta_2 & (i/n_2)\sin\delta_2 \\ in_2 \sin\delta_2 & \cos\delta_2 \end{bmatrix} \begin{bmatrix} \cos\delta_1 & (i/n_1)\sin\delta_1 \\ in_1 \sin\delta_1 & \cos\delta_1 \end{bmatrix}$$
$$\begin{bmatrix} \cos\delta_j & (i/n_j)\sin\delta_j \\ in_j \sin\delta_j & \cos\delta_j \end{bmatrix} \cdots \begin{bmatrix} 1 \\ n_s \end{bmatrix},$$

said thickness of the third layer being selected so that E'_e is substantially equal to 1 and H'_e is substantially equal to n_0.

5. A method of producing an anti-reflection film according to claim 1, wherein said third layer has an attenuation coefficient of substantially zero.

6. A method of producing an anti-reflection film according to claim 1, wherein said second layer has an attenuation coefficient more than 0.001 at a wavelength of 550 nm.

7. A method of producing an anti-reflection film according to claim 1, wherein said second layer has an attenuation coefficient between 0.01 and 10 at a wavelength of 550 nm.

8. A method of producing an anti-reflection film according to claim 1, wherein said transparent substrate is formed of a synthetic resin.

9. A method of producing an anti-reflection film according to claim 1, wherein said second layer is formed of a composite material containing fine particles of at least one selected from the group consisting of metal, metal oxide and metal nitride.

10. A method of producing an anti-reflection film according to claim 1, wherein said second layer is a thin film formed of at least one selected from the group consisting of metal, metal oxide and metal nitride.

11. A method of producing an anti-reflection film according to claim 1, wherein said second layer has a thickness smaller than 30 nm.

12. A method of producing an anti-reflection film according to claim 1, wherein said transparent substrate is formed of polyester.

13. A method of producing an anti-reflection film according to claim 1, wherein said transparent substrate has a thickness between 30 to 300 μm.